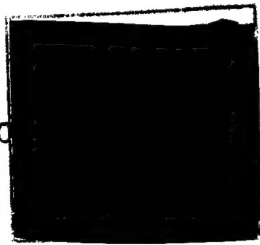


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STATUS OF INFECTIOUS DISEASES IN THE USSR AND PROGRESS

MADE IN COMBATING SUCH DISEASES

- USSR -

by V. M. Zhdanov

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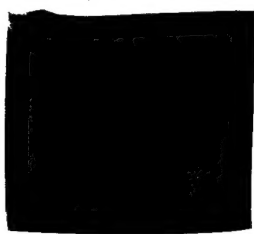
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## FOREWORD

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STATUS OF INFECTIOUS DISEASES IN THE USSR AND PROGRESS  
MADE IN COMBATING SUCH DISEASES.

[Following is a translation of a brochure by V. M. Zhdanov, Deputy Minister of Public Health USSR and Active Member of the Academy of Medical Sciences USSR, entitled "Nastupleniye na Infektsii" (Attack on Infections), No 1, Series VIII, Moscow, 1960, 40 pp, published by "Znaniye" Publishing House, All-Union Society for the Dissemination of Political and Scientific Knowledge.]

Introduction

About 100 years ago, the first steps in a purposeful and scientifically based attack against contagious diseases were made in the modest laboratory of Louis Pasteur in Paris. In those days, the possibility of preventing the development of rabies, a frightening disease of human beings which had been bitten by rabid animals, almost seemed to be a miracle. During the past 100 years, measures for combating hundreds of infectious diseases have been found and developed, and the complete liquidation of many such diseases has become an actual possibility. Most infections have been deprived of their lethal effect, since the majority of infections can be cured.

In the Soviet Union, with its government public health system and advanced medical science, all the necessary conditions have been created for a decisive struggle against infections. Our public health system has accumulated a considerable amount of experience in combating contagious diseases. Such serious diseases as plague, cholera, smallpox, recurrent typhus, etc. have already been liquidated in the USSR. As a result of the level of development of our science, the development of a public health system and the growth of the welfare and standard of living of the population, it is possible to set up the task of liquidating within the next 7-year period such diseases as malaria, diphtheria, tularemia, trachoma and a number of other diseases; a struggle aimed at the complete liquidation of tuberculosis is also a task of the immediate future.

In this booklet, V. M. Zhdanov, Deputy Minister of Public Health USSR, describes the basic principles and methods for combating contagious diseases, the progress achieved by the Soviet public health system in this struggle, and outlines the broad program aimed at the extensive struggle against infections, which will be carried out by our public health system in the next few years.



\* \* \*

Every disease, whether mild or serious, or whether easily curable or chronic, affects the health of a human being and interferes with his normal activities, thereby exerting an injurious effect upon society.

However, if a heart or kidney disease knocks out of commission a single human being, a contagious and infectious disease, on the other hand, by being transmitted from one man to another, may affect large numbers of people and may assume the proportions of a serious national catastrophe. For this reason, the struggle against infectious diseases, the prevention of the propagation of such diseases and their complete liquidation in the area of a given country constitute one of the most urgent problems confronting medical science and the public health system.

Our Soviet government inherited from old Russia large scale epidemics of smallpox, plague and a number of other "pestilent" diseases; there was a high rate of tuberculosis and syphilis infection among the poorest groups of the population, and malaria was raging in the southern regions of the country. There was an outburst of typhus and other epidemic diseases during the foreign intervention and Civil War period.

For this reason, already in 1919, one of the main tasks in the public health field outlined in the program adopted at the VIII Party Congress included the development of measures for preventing the growth and dissemination of infectious diseases.

During the years of Soviet rule, the status of infectious diseases in our country underwent a radical change: such dangerous infections as cholera, plague and smallpox became a thing of the past, parasitic typhus diseases were practically eliminated, malaria became a rare disease, and the morbidity rate of diphtheria was sharply reduced. However, the struggle against infectious diseases is still going on. The growing material well-being and cultural standards of the population, the development of science and the expansion of medical staffs all make it possible to conduct a decisive struggle against infections, which will even result in a complete elimination of most infectious diseases.

The control figures of the 7-Year Plan for the Development of the National Economy of the USSR during 1959-1965 provide for a further powerful upsurge of the national economy of our country. A tremendous housing and public construction program, a further improvement of working conditions, a reduction in the number of daily and weekly working hours with a simultaneous increase in wages, a tremendous increase in the production of food and clothing and the development of public services for satisfying the needs of the population,--such are the favorable conditions in which the Soviet public health system will be operating during the current 7-Year plan.

The material base of the public health system proper will also be strengthened to a considerable extent. Funds allocated for protecting the health of our people will amount to 360 billion rubles.

The decree issued in January 1960 by the CC CPSU (Central Committee of the Communist Party of the Soviet Union) and the Council of Ministers of the USSR stipulates that capital investments, allocated for the development of the public health system, be used primarily for the construction of therapeutic and prophylactic establishments such as hospitals, polyclinics and maternity hospitals. By 1965, the number of hospital beds will increase to 2,148,600, as compared to 1,532,600 in 1958. Hundreds of thousands of new spaces will be opened in sanatoria and rest homes, and the number of available spaces in kindergartens and nurseries will be sharply increased.

Production of drugs, of technical medical articles and other medical items will be increased 3.5 times, as compared to 1958. The volume of capital investments for the development of the medical industry during the 7-year period will be increased 4 times in comparison with the preceding 7-year period. The network of pharmacies and the supply of sanitary and hygienic articles will be considerably expanded.

The construction of scientific medical establishments will also be expanded, and institutes and laboratories will be supplied with new and modern equipment. These institutes and laboratories will play a greater part in searching for new and effective means of combating diseases.

Measures have been outlined for improving the training of medical staffs; the working and living conditions of medical personnel will be considerably improved. All these measures will contribute to a further strengthening of the health of our people and to a reduction of the disease rate.

Favorable conditions are being created for combating infectious diseases; this struggle is also becoming more and more effective as a result of the fact that the greatest amount of scientific progress has precisely been achieved in the study of infectious diseases. Therefore, there is every reason to believe that new and rapid progress will be made in this medical field within the next few years. The time is drawing close, when a number of infectious diseases will be completely wiped out and when the morbidity and death rate of most of these diseases will be checked.

The CC CPSU and the Council of Ministers USSR has confronted the public health organs and the Councils of Ministers of union republics with the task of developing and carrying out measures, with due consideration to local conditions, which will completely eliminate diphtheria, tularemia, poliomyelitis and a number of other diseases of local importance (malaria, etc.), and also of achieving a sharp reduction in the morbidity rate of abdominal

typhus, whooping cough, ascariasis, acute intestinal infections and brucellosis.

#### Fundamental Principles for Combating Infectious Diseases

Infectious (contagious) diseases differ from other types of human diseases in that they can be transmitted in one way or another from one person to another.

In ancient times, it was believed that these diseases were caused by evil spirits transmitted by one person to another, or it was assumed that they were the result of the action of harmful emanations, such as miasms, in unhealthy regions. However, the Roman philosopher Lucretius Carus, who lived in the first century before our era, already expressed the thought of a living contagion as being the cause of infectious diseases. This concept became steadily more popular, and in the 16th-17th century was elaborated by the Italian physician Fracastoro and the English physician Sidenham. In Russia, a fervent believer in this concept was the famed epidemiologist Danila Samoylovich.

However, only in the 19th century, following the great discoveries made by L. Pasteur, R. Koch, I. I. Mechnikov and other founders of the modern theory of infectious diseases, was it finally proven that living agents, namely pathogenic parasites, are the stimulants of infectious diseases in humans and animals.

The overwhelming majority of these parasites are micro-organisms i.e. they are either microbes of plant origin (bacteria, microscopic fungi) or of animal origin (the most simple micro-organisms), or they occupy an intermediate position between animals and plants (viruses). However, a number of contagious diseases are caused by higher organized parasites, such as worms (helminthic diseases) and Arthropoda (scabies).

In spite of their great variety, all stimulants of contagious diseases exhibit one common property, namely parasitism. In the course of a prolonged evolution, these organisms became adapted to a parasitic life in the human or animal organism, and if they find themselves in a non-living medium, they are capable of retaining their vitality only for a more or less long period of time. The stimulants of contagious diseases may only preserve their status of biological species as long as they are constantly transferred from an infected organism into a healthy organism. This unbroken chain of infections constitutes the so-called epidemic (if we speak of contagious human diseases) or epizootic process (when we refer to contagious animal diseases).

There are four main paths of infection, and infectious diseases are accordingly subdivided into four large groups.

In some cases, the stimulants are excreted with the contents of the intestines or with urine. Landing on soil or water, or transferred to food products by means of dirty hands or flies, the parasites are finally able to penetrate into the organism of a healthy person (through the mouth into the digestive tract). Abdominal

typhus, dysentery and helminthic diseases are transmitted in this manner. In accordance with the source of infection, this whole group of diseases carries the name of intestinal or water-food infections.

Another group of stimulants is excreted from a patient's organism into the outside environment through the respiratory passages. When talking, coughing or sneezing, a person ejects into the air an enormous amount of extremely fine saliva and mucus droplets, which may contain pathogenic microbes. When these microbes are inhaled by another person, an infection may result. Measles, influenza and diphtheria are transmitted in this manner. This entire group of diseases carries the name of infections of the respiratory tract or aerial drop infections.

In the third case, the stimulants are located on the skin and on external mucous membranes, and are transmitted upon coming in contact with the patient. There is a great variety of skin and mucous body tissues, and therefore there is a difference in the transmission mechanism of these diseases: syphilis and other venereal diseases are transmitted during sexual intercourse, trachoma is transmitted when people use the same washcloth or wash basin, while herpes tonsurans is transmitted during daily public contacts. All these diseases are designated as infections of external body tissues.

Finally, the fourth group includes diseases transmitted by live carriers, such as insects, ticks, rodents, etc., whereby the organism of these animals is frequently the site of parasitic reproduction and maturity. Thus, the Anopheles mosquito is the carrier of malaria; exanthematous fever is transmitted by lice, the plague by fleas, and encephalitis by ticks. This group of diseases carries the name of blood (since the stimulant circulates in the blood and lymph) or transmitter diseases.

Many contagious diseases affect only man, while animals, under normal conditions, are not subject to such diseases. Examples of such diseases are typhus, measles, syphilis and malaria. These diseases are known as anthroponoses, in contrast to zoonoses, i.e. diseases which are transmitted to man by animals. Such diseases include brucellosis (infection occurs through sheep and cows), rabies (man becomes infected through dogs and wolves), tick-borne encephalitis (man becomes infected through ticks present on small rodents).

We have already stated above that a continuity of epidemic or epizootic processes is an indispensable condition for the existence of a disease stimulant as a species, and consequently, for the existence of the disease caused by this stimulant.

The epidemic chain consists of 3 links: sources of infection (infected people or animals), factors involved in the transmission of the infection carriers (i.e. those elements in the environment, including animal carriers, with the aid of which the stimulant is

transferred from an infected organism into a healthy organism), and people susceptible to the given disease.

A break in any one of the links of this epidemic chain means an interruption of the continuous epidemic process, or in other words, a stop in the propagation of the infectious disease. The struggle against infections is actually based on this fact.

One possible way of breaking up the epidemic chain is to neutralize the harmful effect of infection sources: for this purpose, a patient is isolated from his neighbors medicines are used, which destroy the stimulant in the patient's organism, and in case of zoonoses infected animals are decontaminated (or killed). Thus, for example, a patient suffering from abdominal typhus is placed into an infection hospital where he is no longer capable of infecting people living in the same quarters. The use of antibiotics, which destroy the tuberculosis bacillus (*Mycobacterium tuberculosis*), makes tb patients harmless to their environment. The destruction of rabid dogs prevents people from becoming infected with this disease.

Another possible way to break up the epidemic chain is to act upon the factors associated with the transmission of the infection carrier. A desinfection performed in the focus of dysentery prevents the contamination of neighbors through objects contaminated by the patient's excretions. The destruction of malaria-carrying mosquitos precludes the possible dissemination of malaria. A sterilization of brushes used in barber shops precludes the spread of skin diseases transmitted by these objects.

Finally, a third possible way is the attempt to make people non-susceptible (resistant) to a given disease. For this purpose, preventive inoculations of vaccines and sera are being used. As a result of smallpox vaccinations, a person becomes immune to this disease for several years and if these vaccinations are repeated several times the person becomes immune for life. When children are injected with antimeasles serum (gamma-globulin), they become immune to measles during the next 2-3 weeks; the use of this serum may even prevent a child who has become infected with measles from becoming sick provided the serum is injected early enough. Chemical prophylactic measures are also used for the same purpose, i.e. medicines are not administered for a therapeutic purpose, but rather in order to prevent the disease, thus, for example, the administration of acrichine and plasmocide to people located in malaria foci prevents the development of this disease in such people, even if they had been bitten by infected mosquitos.

As can be seen from the above examples, the dissemination of infectious diseases can sometimes be prevented by breaking up only one of the three links of the epidemic process. In practice, however, it is not always easy to achieve a complete and reliable break of the epidemic chain, and for this reason antiepidemic measures usually involve a combination of measures, i.e. they are aimed at breaking up all three links. Thus, for example, in combating



abdominal typhus, it is very important that patients be placed as rapidly as possible into infection hospitals and that they be treated with antibiotics (action upon infection sources). However, of equal importance in combating this type of infection is the supply of good-quality drinking water and food to the population, the timely removal and decontamination of excretions (feces), the systematic struggle against flies (action upon factors associated with the transmission of the infection carriers); certain groups of the population, which are more likely to become infected with abdominal typhus, must receive prophylactic inoculations (action upon a susceptibility to infection).

Obviously, among the combined prophylactic measures, not all measures are equally important and effective: some of these measures are more important, while others are of secondary importance. For this reason, in planning preventive measures, public health organs are striving to utilize available resources in such a manner, as to achieve a maximum effect with a minimum expenditure of effort and financial costs.

The struggle against infectious diseases is conducted by the efforts of all medical personnel, and primarily in medical establishments handling large groups of patients, such as polyclinics, hospitals, women and children consultations, and also in special establishments, such as tuberculosis dispensaries, venereological consulting offices, etc. The general organization of the program for combating infectious diseases is carried out by the sanitary and epidemiological service. Numerous sanitary measures, having a great prophylactic importance, are carried out by municipal economy organs, veterinary organs, and also by industrial and economic organizations.

The successful struggle against infectious diseases depends to a very large extent on the efforts of the population itself. For this reason, the sanitary education and self-reliance of the population play an important role in the system of measures aimed at the prevention and combat of infectious diseases.

#### The Struggle Against Infections in the USSR

Pre-revolutionary Russia had a very high morbidity and death rate caused by infectious diseases. Epidemics of exanthematous fever and recurrent typhus, companions of poverty and congestion, occurred on a wide scale. The high rate of incidence of abdominal typhus and chronic water epidemics of this disease were the consequence of a poorly organized water supply system.

Millions of people came down with malaria every year, and a considerable portion of these people did not even receive any drugs, while prophylactic measures were practically not applied at all. There was a high death rate from infectious children's diseases, such as diphtheria, scarlet fever, measles and whooping cough, with hundreds of thousands of children dying from these diseases every

year. Smallpox epidemics were constantly raging in the country, and there were occasional outbursts of plague and cholera epidemics. Thus, during the three "cholera" years (1907-1909), 259,512 people came down with cholera, and 122,967 people died from this disease (see Note).

(Note: In comparing these figures with subsequent figures on the incidence of disease in the USSR, it is necessary to bear in mind that statistical information on infectious diseases was very incomplete at that time. There were only 23,000 physicians in pre-revolutionary Russia (1913), while at the present time (1960) there are approximately 380,000 physicians in the USSR. For this reason, the recording of even such serious diseases as smallpox and cholera was incomplete, particularly in border regions and in rural areas in general. Obviously, the official data on the incidence rate of most infectious diseases reflected only a small part of the actual morbidity rate of these diseases.).

It is not by chance, therefore, that World War I resulted in an epidemiological calamity in Russia. Already during the first years of the war, there was a rapid increase in the number of infectious diseases, and serious epidemics of parasitic typhus and intestinal infections, of smallpox and cholera broke out on the front and in rear areas of the country.

The Soviet republic formed after the October revolution inherited an extremely serious epidemiological situation, which became even worse during the Civil War years (1918-1921), when a large portion of the country was ruled by counter-revolutionary White armies and foreign interventionists. The economic collapse which accompanied the civil war was further complicated as a result of the low harvest and famine of 1922. Under these conditions the morbidity rate of parasitic typhus infections assumed unbelievable proportions. According to rough estimates, about 6.5 million people contracted exanthematous fever, and over 3 million people came down with recurrent typhus during the 1918-1922 period.

The problem of liquidating epidemics of infectious diseases was of utmost importance for the youthful Soviet public health system, and for this reason V. I. Lenin entrusted this problem to Soviet ruling organs in the whole country, as a task of utmost national importance. This task was successfully solved during the next several years. By 1929, a sufficiently satisfactory epidemiological status had been achieved: the morbidity rate of the most important infectious diseases was reduced to the pre-revolutionary level, and cholera was liquidated over the entire territory of the USSR during this period.

During the period of the country's industrialization and collectivization of agriculture, particularly during the years of the First Five-Year Plan, as a result of the increased movement of large numbers of people throughout the country, there was an increase in the rate of certain infectious diseases, mainly of parasitic typhus

infections. However, individual outbursts of such diseases were by no means comparable to the epidemics of former years.

As a result of the greater economic power of the country and the strengthened public health system, arising outbreaks of contagious diseases could be rapidly liquidated. Already in the 1930's our country had solved two important problems in the public health field, namely smallpox had been liquidated, and reliable measures had been worked out for the prevention of plague epidemics.

As a result of the availability of sufficient numbers of medical personnel (in 1932, the country had 76,000 physicians), and the presence of a network of sanitary-bacteriological institutes producing vaccines and sera, it was possible in the middle 1930's to conduct a program of individual inoculation of the population against smallpox, which had already been outlined in a decree issued by V. I. Lenin on 10 April 1919. As a result of this program, the morbidity rate of smallpox, which in 1932 affected 59,807 people, was rapidly reduced, and in 1936, smallpox was completely eliminated in the whole country.

During the same period, a special organization was created, which directed work aimed at preventing the outbreak of plague epidemics in extensive enzootic foci of infection, i.e. in areas where wild animals acted as disease carriers (Volga Region, Northern Caucasus, Central Asia, East Siberia). Shortly afterwards, measures were introduced for preventing the possible development of plague epidemics, and later extensive natural foci of this infection were liquidated in the Volga Region, in certain Don districts and in East Siberia. Cases in which people contracted the plague in remaining enzootic regions, which occurred in subsequent years, never developed into large-scale epidemics and remained confined within the limits of local foci of this disease.

By 1939-1940, the morbidity rate of the most serious infectious diseases was sharply reduced, both in comparison with the pre-revolutionary period and with the rate prevailing in 1929.

World War II was a very severe test for the Soviet government and its public health system. Everyone knows the extent of the damage inflicted to our country by the German-Fascist invaders. However, the Soviet public health system was able to handle in a satisfactory manner all the tasks with which it was confronted during these years. For the first time, in contrast with previous wars, this war was not accompanied by an outbreak of severe epidemics of infectious diseases.

It must be admitted, however, that an increase in the morbidity rate of certain infections, such as parasitic typhus diseases, tularemia, abdominal typhus, was observed during this period; however, the maximum number of diseases due to such infections did not even exceed the level observed during the middle 1930's. It is characteristic that epidemic outbreaks of exanthematous fever and abdominal typhus were mainly observed not during the first (the most critical)



period, but rather during the second half of the war, and primarily in areas liberated from temporary German occupation (Ukraine, Belorussia, Western districts of the RSFSR), where populated centers were destroyed and the public health network had been liquidated. The same situation applies to tularemia, which affected the population in a number of districts in the Ukraine, Moldavia, on the lower course of the Don and in the Northern Caucasus.

Recurrent typhus was brought in from Central Asia by a flow of re-evacuated people and was rather widely disseminated in the Ukraine and adjacent oblast's. This disease was liquidated in the early 1950's.

Thus, although the morbidity rate of certain infections had increased by the end of the war, this increase did not assume alarming proportions, while in the case of many infections, a reduced morbidity rate was even observed.

A large number of important anti-epidemic measures have been carried out during the years following the end of World War II, and noticeable progress was achieved in reducing the morbidity rate of infectious diseases.

The morbidity rate of parasitic typhus diseases has been sharply reduced. Recurrent typhus and epidemic forms of exanthematous fever have already been liquidated in 1951. A small number of individual exanthematous fever cases (not large-scale infections), which are still observed at the present time, are characterized by a light course of the disease, are not connected with the presence of lice, and apparently constitute a recurrent disease among persons who have formerly suffered from exanthematous fever (which is known abroad as "Brill's disease").

Very significant progress has been achieved in the struggle against malaria, which is being liquidated at a very rapid rate. At the present time, only a few foci of this infection are still remaining (Azerbaijan and Tadzhik SSR's, certain districts in Central Asia and Siberia). In 1959, the number of recorded malaria cases in the country amounted to less than 1,500 patients. The complete liquidation of malaria will be effected within the next 1-2 years.

Although the total number of cases of children's infections did not drop, and even increased somewhat during the post-war years (see Note), the mortality rate due to children's infections was sharply reduced during the past 10 years, when antibiotics became widely used in therapeutic practice. At present, a general reduction in the morbidity rate of such diseases can be observed. (Note: During these years, a significant increase in the birth rate and in the numbers of low-age children was observed.)

The struggle against tuberculosis is being waged on a wide front. As a result of prophylactic measures and the application of new powerful drugs, the morbidity and mortality rates of this disease are being rapidly reduced. Thus, the morbidity rate of

tuberculosis among the urban population in 1957 dropped by 45% in comparison with 1950, while the mortality rate dropped by 67% during the same period.

The morbidity rate of syphilis has been sharply and greatly reduced, and new cases of this disease occur in very small numbers at the present time.

Good results have been obtained in the prevention of a number of intestinal infections. The morbidity rate of abdominal typhus, after exhibiting a slight increase during the last years of the war, was later sharply reduced. At present, isolated foci of this infection are found in certain regions of the country, in which the water supply system is not properly organized. In most regions of the USSR, however, the incidence of abdominal typhus has been reduced to a few rare and isolated cases.

The morbidity rate of dysentery and of other similar acute intestinal disorders (colienteritis, etc.) has been greatly reduced.

Greater difficulties are experienced in connection with two other intestinal infections, namely epidemic hepatitis (jaundice) and poliomyelitis, which have recently shown a tendency to increase in frequency. The growing morbidity rate of polio has already been stopped: a large-scale program of anti-polio inoculations went into effect in 1957-1958, whereby at first a dead (killed) vaccine and later a live vaccine, were used. The large-scale inoculation program carried out in 1959 has already produced definite results: the overall national morbidity rate of polio was reduced by 35%, while in those areas where inoculations were carried out at an earlier date and on a larger scale, the polio rate has already been reduced to a few isolated cases.

So far, it has not been possible to reduce the morbidity rate of epidemic hepatitis.

Thus, in the past few years, it has been possible to reduce the morbidity rate in our country of most infections, with the exception of influenza, child infections and epidemic hepatitis.

#### The Problem of the Liquidation of Infectious Diseases in Our Country

It is possible to set up new and bolder tasks in the field of prevention and liquidation of infectious diseases in the USSR within the near future, as a result of an analysis of the morbidity rate of infectious diseases and of the dynamics of this morbidity rate, and also as a result of the experience gained by the Soviet public health system in combating such diseases, of its greater material capabilities, and in view of the higher standard of living and sanitary culture of the population.

As a result of special work conducted at the Academy of Medical Sciences of the USSR, which was approved by the Board of the Ministry of Public Health USSR, it was considered expedient to divide all infectious diseases into the following four groups.

The first group includes infections which can be completely liquidated within the near future or the morbidity rate of which can be reduced to a few isolated cases. This group includes diphtheria, abdominal typhus, syphilis, trachoma (in the remaining foci) favus, helminthic diseases such as ancylostomiasis and Taeniarhynchus infestation, and also poliomyelities. In addition, it is planned to complete the liquidation of malaria and also of certain infectious diseases of local importance, such as rabies, tularemia, urban-type leishmaniasis and leprosy.

The second group includes infections, the morbidity rate of which must be sharply reduced, which will later allow to adopt measures aimed at the complete liquidation of a given disease or its liquidation as an epidemic form. This group includes tick-borne encephalitis (see Note), ascariasis, gonorrhea and tuberculosis. (Note: It is planned to prevent any outbreaks of this disease among personnel attached to surveying groups or working on new construction projects.)

The third group includes infections, the liquidation of which is a possibility on the basis of fundamental theoretical premises, but which require either additional research or the overcoming of a number of organizational difficulties, as a result of which it is only possible to make plans in the immediate future for a considerable reduction of their morbidity rate, and not for their liquidation. This group includes dysenteric infections and other acute intestinal diseases, whooping cough, epidemic parotitis, brucellosis, and such helminthic diseases as trichocephaliasis, taeniasis, diphyllbothriasis and opisthorchosis.

The fourth group includes infections, the possibility and the time of liquidation of which cannot yet be determined, in view of the fact that the most important theoretical and methodological problems connected with these infections have not yet been solved. The immediate task in this connection involves a concentration of efforts on the part of research and practicing establishments towards a solution of these problems. This group includes anginas (a mixed group of diseases, apparently of a different nature), influenza, parainfluenzal virus infections, epidemic hepatitis, measles, scarlet fever, varicella and erysipelas.

The above list of diseases is, of course, arbitrary to a considerable extent. Certain infections are almost entitled to be included in a group adjacent to the one in which they have been included. In addition, the problem of listing a given infection in one or another group can be solved in a different manner in various union republics.

Obviously, a successful struggle against a given infection and the possible liquidation of this infection are determined by a large number of factors and conditions. The following main factors might be cited: the level achieved by science in the study of a given disease; the available network of medical establishments and the number of personnel working in these establishments; the

availability or lack of effective prophylactic and therapeutic means and methods; the extent to which these means and methods are practically available in medical establishments; the possibility of successfully combating the spread of a disease solely through the efforts of public health organs, or the need of enlisting the cooperation of other organizations in this work; finally, the economic costs required for this purpose, and the national economic capabilities.

Let us illustrate the above statements by several examples. At the present time, natural smallpox has been thoroughly studied from all aspects. Scientific medicine has found a radical measure for combating this disease, namely preventive inoculations. For this reason, the liquidation of smallpox became an actual possibility already at the end of the last century, when the anti-smallpox vaccine was developed. However, the fact that this was actually possible does not yet mean that it could be actually accomplished in practice. In spite of the possibility of administering preventive inoculations, smallpox continued to be a widely occurring epidemic disease in Tsarist Russia at the beginning of the 20th century. It was also not possible to liquidate this disease right away during the early years of Soviet rule. Only in the middle 1930's, when our country had a sufficiently large number of medical personnel and the medical industry was capable of producing a sufficient amount of vaccine, did the necessary conditions materialize for solving this problem. During the course of 2-3 years, individual smallpox vaccinations were administered to the entire population of the country, and this disease was eradicated. It is possible, of course, that individual cases of smallpox, brought in from foreign countries, may take place until the time when this disease will be eradicated in the whole world.

In regard to such an infection as influenza, which has not yet been studied to a sufficient extent, means are at present available to practicing medicine, which can only limit the spread of this disease, but cannot bring about its liquidation. Consequently, further scientific research must be conducted prior to tackling the actual problem of the liquidation of influenza.

New progress in the field of science can considerably shorten the time required for the liquidation of individual infectious diseases. Thus, for example, no actual means were available 5 years ago for combating polio, not even means which could reduce or limit the morbidity rate of this disease. At the present time, however, when our public health system is supplied with effective polio vaccines, the problem concerning the liquidation of this serious disease assumes practical importance and is already being solved.

If all the various possibilities and conditions are taken into account, the struggle against a given infectious disease involves one of the following problems:

1. Complete liquidation of the disease, including the

destruction of its stimulant as a biological species on the territory of the country.

2. Liquidation of the disease among people or the prevention of the appearance of this disease, although the actual or potential epidemic (enzootic) foci of the disease present on the territory of the country cannot be destroyed at the present time.

3. Localization of the large-scale morbidity rate of a given infection or the localization of this infection on limited controlled territories.

4. Maximum reduction of the morbidity rate of a given infection or a limitation of its epidemics.

In connection with a number of diseases, it is possible to consider only problems of a more specific nature, such as a reduction in the mortality rate, a lowering of the invalid period, a reduction in the frequency of complications, etc.

Our public health system has already accumulated a considerable amount of experience in connection with the complete liquidation of individual infections.

Among the infectious diseases which have been completely liquidated on the territory of the USSR (i.e. diseases, the stimulant of which has been eradicated as a species), we might mention cholera, smallpox, recurrent typhus, venereal lymphogranuloma, soft chancre, Grigor'yev-Shiga dysentery, and a helminthic disease known as dracunculosis (*Draculuncus melitensis*).

Among these six infections, only cholera was a disease which had been brought in from other countries; cholera epidemics usually developed after the cholera stimulant had been brought in from Asian countries. For this reason, cholera could be liquidated by conducting operational anti-epidemic (quarantine) measures.

The remaining five infections were constantly present on the territory of our country. Their liquidation required the conduct of planned preventive measures. The liquidation of smallpox involved an individual immunization of the population (inoculation of anti-smallpox vaccine) and a subsequent revaccination (a second introduction of the vaccine), which maintained a high level of immunity towards this infection.

Recurrent typhus was liquidated as a result of carefully planned work involving the identification and hospitalization of patients suffering from this disease, and a persistent struggle against the carrier of this disease, namely clothing lice. The stabilization of living conditions in the country and improved sanitary conditions of the population contributed to a rapid solution of this problem. It is interesting to note that the complete liquidation of recurrent typhus was achieved prior to the complete eradication of its carrier, namely clothing lice (Note: In this case, the first link of the epidemic chain was broken, a result of the strict isolation of patients.)

The liquidation of venereal lymphogranuloma was made possible by the active identification of patients and their effective treatment under conditions precluding the further spread of this infection.

The struggle against Draculuncus melitensis was conducted by the same methods: all patients were accounted for, isolated from their neighbors and subjected to treatment, while measures for destroying the stimulant of this disease, the parasitic worm Draculuncus, were put into effect in the centers of dissemination of this disease. It was found that small crayfish (cyclopes), living in drinking water, acted as the intermediate host of this parasite. By cleaning water reservoirs and changing their water, it was possible to stop the spread of this infection.

A great achievement of the Soviet public health system was the practical liquidation of Grigor'yev's-Shiga dysentery, one of the four different forms of dysentery occurring in our country.

The stimulant of Grigor'yev's-Shiga dysentery was widespread in the early 1930's, and constituted 40-50% of all dysentery stimulants isolated from patients. In subsequent years, as a result of a series of antidysenteric measures, the morbidity rate of this form of dysentery dropped sharply. In 1940, this stimulant was found only in 5-10% of the patients. During World War II, outbreaks of dysentery caused only by this stimulant took place in a number of locations, but in the 1950's, only isolated cases of this particular form of dysentery were observed. Apparently, Grigor'yev's-Shiga dysentery has been completely, or almost completely, liquidated in the entire territory of the USSR at the present time. This was the result of extensive and complex work, aimed at combating the entire group of dysenteric diseases, which started to be put into effect in a systematic and extensive manner in the middle 1930's.

This series of anti-dysenteric measures included the identification and hospitalization of patients, a disinfection and medical observation in centers of the disease, a laboratory diagnosis of disease cases and an identification of carriers, the conduct of general sanitary measures, and also a specific prevention program based on the use of caccines and bacteriophages.

It turned out that Grigor'yev's-Shiga dysentery could be wiped out with the aid of these measures because this form of disease almost always follows a severe course and can be easily diagnosed; a person who has been subject to this infection usually develops a stable immunity to this disease, and chronic forms, which present the greatest danger from the standpoint of a spread of the infection, occur very rarely; in addition, the stimulants of this disease are less stable than in other forms of dysentery.

At the same time, these measures did not result in a liquidation of other forms of dysentery, since these forms frequently follow a light course, marked by simple diarrhea, which do not compel a patient to consult a physician; the resulting immunity is



so low, that this disease assumes a chronic course in 10-20% of the patients. Thus, it is considerably more difficult to achieve a thorough identification and isolation of the patients, and to ensure a reliable disinfection of those patients which have been identified. The struggle against these forms of dysentery has produced successful results only in recent years, when all acute intestinal disorders have been subject to medical control, and when all diagnosed patients were subjected to a systematic therapeutic treatment with antibiotics and immunizing preparations both in hospitals and at home.

As was stated above, it is sometimes possible to prevent people in a reliable manner from contracting a particular disease, by means of properly conducted prophylactic measures, even when the stimulant of the disease has not been destroyed on the territory of the country. Plague can be cited specifically as an example of such diseases. Natural foci of plague, i.e. localities where wild animals suffer from this disease, still occur in wide areas of our country, although a considerable amount of decontamination work has been carried out in these areas.

At present, two natural foci of plague have been practically liquidated: one of them, where gophers (susliks) acted as the infection carriers, extended over wide areas along the lower course of the Don and in the Northern Caucasus and Middle Volga Region; while the second focus of plague, in which tarbagans acted as infection carriers, included wide areas of the Trans-Baykal region. Plague was wiped out in these territories over a period of 20 years by killing off these rodents over wide areas. Agrotechnical measures, which helped to wipe out gophers, were carried out in the European part of the USSR.

The most extensive and epizootically active plague focus at the present time includes a region in Central Asia, which extends from East Kazakhstan to the Lower Volga Region and from the Northern Caucasus to the southern borders of Turkmenia. The Pre-Volga Region plague focus constitutes a natural extension of this focus. Also active as a plague focus is the region extending over a portion of the Northern Caucasus, the Western Pre-Caspian Region and the Eastern Transcaucasus. "Peschanki" (hamsters, jerboas?) and gophers (susliki) act as plague carriers both in Central Asia and in the Caucasus. Of much lesser importance at the present time is the mountain plague focus in Central Asia, where marmots act as the carriers of this disease.

All prophylactic work in regions of active plague foci is being carried out under the direction of a special antiplague organization. The spreading of plague among human beings is being prevented in a reliable manner by a consistent program of prophylactic measures. Naturally, individual cases of human contagion may take place in natural plague foci (see Note), although the further spread of this disease among the population and its transfer

beyond the boundaries of the focus are completely excluded (Note: When isolated cases of plague contagion do take place, they do not present any great danger at the present time, since plague can be effectively treated with streptomycin.)

The epidemic form of exanthematous fever has been liquidated in our country. The large-scale incidence of this disease had already been eliminated by the end of the first post-war Five-Year Plan, although the morbidity rate of this disease dropped rather slowly during subsequent years. It must be stated, however, that outbreaks and group incidences of this disease, associated with a propagation of clothing lice, have stopped almost completely during the post-war period. At present, this disease is observed primarily in people who had contracted typhus in the past, and it occurs in the absence of any lice infestation in the population. Many foreign and Soviet researchers attribute these cases to a relapse of a exanthematous typhus infection suffered in the past (Brill's disease).

Within the next few years, the list of infectious diseases which have been wiped out in our country will be substantially increased. A further number of serious diseases will be a thing of the past.

Malaria will rank first in this new list of wiped-out diseases. Only 15 years ago, over 3 million people suffered every year from malaria in our country. A decisive onslaught against this infection was launched shortly after the end of World War II. By that time, our chemical industry had started to manufacture sufficiently large amounts of DDT and hexachloran, which are stable insecticides allowing a systematic destruction of malaria-carrying mosquitos. More effective chemotherapeutic preparations are now being used in the treatment of malaria. Each year, the morbidity rate of malaria was reduced 2 times, and sometimes even more. In 1946, 3.4 million cases of malaria were recorded, in 1950 - over 700,000 cases, in 1955 - 35,000 cases, in 1958 - 2,504 cases, and in 1959, the number of malaria cases did not exceed 1,500.

At present, the only remaining foci of malaria are located primarily in Azerbaydzhan, Tadzhikistan, and in certain regions of Siberia and Kazakhstan (Note: These foci usually include 1-2 populated points in a rayon or oblast', having several, and sometimes even only one, malaria patients.) It will undoubtedly be possible to liquidate these foci within the next  $1\frac{1}{2}$ -2 years, and this will represent a liquidation of malaria in the entire Soviet Union.

At the same time, it is necessary to consolidate the progress achieved in most regions of the country, so that malaria will not be brought in from other localities and in order to prevent the formation of new infection foci. It is necessary to be constantly on the alert and to conduct prophylactic work in those oblast's and republics in which isolated cases of malaria or no cases at all are observed. Measures should also be taken for a timely DDT



treatment of water reservoirs in which the multiplication of Anopheles mosquitos may take place, and also for a systematic examination of the population in malaria regions aimed at detecting the presence of parasites on their body and clothing.

Tularemia, in the same way as plague, has its own natural foci of infection, i.e. the existence of tularemia is not associated with human diseases, but rather with diseases affecting wild animals, namely rodents.

Natural tularemia foci extend over wide areas of the country, which cover a considerably greater territory than those of plague foci. Apparently, epizootics of this infection among rodents were frequently accompanied by outbursts of the disease among humans; however, the diagnosis and the recording of the morbidity rate left much to be desired both in the past and in the early part of the present century. A systematic study of this disease was undertaken only in the 1930's, when an official recording of this disease was introduced. The most intense outbreaks of tularemia in humans were recorded in the middle 1930's, during World War II and during the immediate post-war years. The struggle against this disease solely with the aid of anti-epidemic and sanitary measures did not yield any significant results in view of the complex means of propagation of this infection. This struggle became effective only after the practical introduction of a prophylactic vaccination with a live vaccine. (1947-1950).

By this method, it was possible to avoid the development of this disease among the population of rural areas, where natural tularemia foci are present, and where it is difficult to avoid the many possible ways in which tularemia may be contracted: for example, through water, or during horse fly stings (which act as tularemia carriers), or as a result of contact with field rodents. By means of a large-scale vaccination of the population in many regions, it was possible to reduce the tularemia morbidity rate in the entire country to a few hundred cases, and thus to come a step closer to the liquidation of this formerly massive epidemic disease.

The liquidation of syphilis in our country is an entirely practicable problem at the present time. The social roots of this disease were already severed during the period of socialist building, when unemployment and prostitution were wiped out. At the same time, an extensive network of venereological establishments was developed, venereological staffs were trained, and methods for treating syphilis were improved. During the period of Soviet rule, the morbidity rate of syphilis was reduced several times and is very low at present. The introduction into medical practice of new antibiotics with a prolonged action makes it possible to wage an even more intensive struggle against this infection. It is entirely possible that syphilis will be completely liquidated in our country within the near future.

Another immediate problem is the complete liquidation of such a serious disease as tuberculosis, although this will probably require over 10 years. Modern medicine has basically solved the problem concerning the treatment of tuberculosis, its clinical cure and the decontamination of tb patients as sources of infection. However, these results can be achieved only in case of a sufficiently early diagnosis and an early start of treatment. Therefore, from a practical standpoint, it is most important at present to ensure an early diagnosis of tuberculosis, as well as to observe prophylactic measures.

The organization of a system for the diagnosis and treatment of tb patients requires the outlay of substantial monetary funds. Our government is exceedingly generous in allocating enormous funds for this purpose, which are used for the development and maintenance of tb hospitals and sanatoria, for the equipment of therapeutic establishments with X-ray units, and for the free supply of drugs to patients, etc. According to the decree issued by the CC CPSU and the Council of Ministers USSR, an improvement of the hospitalization of tb patients will be given priority consideration during the construction of new hospitals. Production of antibiotics will be increased several times during the 7-Year Plan, and this will also result in an improved treatment of tb patients. New housing construction, which is now in progress on a tremendous scale, is an extremely important factor in the struggle against tuberculosis.

As a result of all these measures, the number of new tb cases is dropping each year, and the tb mortality rate is exhibiting an even sharper drop. However, considerable time and effort will be required in order to liquidate this dangerous disease, which we have inherited from our difficult past.

Diphtheria ranks among the first infectious diseases which will be liquidated in the next few years. In combating this infection, all the necessary premises are available in our country for achieving a sharp reduction of its morbidity rate and for reducing its incidence to a few isolated cases within the next 2-3 years. In this connection, it is interesting to note the experience gained in large cities, such as Moscow, Leningrad, Rostov, and also in the Ukrainian SSR as a whole, where the diphtheria morbidity and mortality rates are being reduced each year. In Moscow, for example, a 12-fold reduction in the diphtheria morbidity rate was achieved during a period of 2 years.

The most important factor in the struggle against diphtheria is a correct organization of prophylactic inoculations. These inoculations are given for the first time to infants at the age of 3-6 months, and are then repeated at the age of  $1\frac{1}{2}$ , 3, 6 and 11 years. It is very important that each child be inoculated at the proper time, and this is something which not only physicians, but also parents, should be concerned with. As a result of accurate and timely inoculations, it will be possible to wipe out this dangerous child infection in the near future.

As we have stated above, abdominal typhus has ceased to be a mass (large-scale) disease in our country a long time ago. The complete liquidation of this disease is now primarily a sanitary problem. Cases of abdominal typhus still occur in localities with a poorly organized water supply system. When the latter is improved and a strict control of the sanitary condition of all populated points is introduced, this severe infectious disease will also become a thing of the past.

As a result of the progress achieved by Soviet medicine in the past few years, it is also possible to study the problem concerning the liquidation of such a severe infection as poliomyelitis. It was stated above that the morbidity and mortality rates of this disease could be sharply reduced, following the practical introduction of anti-polio vaccines and the improved medical assistance to patients. The main problem at the present time is a large-scale immunization of children. There are now 2 operating institutes in the USSR, which manufacture anti-polio vaccines. At present, several million children have already been inoculated with killed and live polio vaccine; the volume of inoculations will be increased considerably in the near future. On the basis of all these facts, it is possible to assume that the polio morbidity rate in the country will be sharply reduced already during next year, and will later be reduced to a level of isolated sporadic cases.

Among the infections which will probably be liquidated within the near future, a number of diseases might be mentioned, which are not found everywhere, but which are observed only in individual localities. Such diseases include trachoma, favus, rabies, leprosy, leishaniasis, and a number of other even less common diseases.

Trachoma is a contagious chronic eye disease, which in neglected cases may result in blindness. This disease was formerly very widely distributed, particularly among national minorities in Russia, which lived in very poor sanitary conditions. During the years of Soviet rule, the great majority of the regions affected by trachoma were restored to a normal health status.

The treatment of trachoma requires a prolonged administration of antibiotics (synthomycin, biomycin) in an ointment form. In order to prevent the spread of this disease, it is most important to observe hygienic regulations, particularly in the families of patients, as well as to keep patients under medical observation. All these measures have already produced good results, and the present task merely involves the liquidation of the few remaining infection foci.

Foci of a severe helminthic disease, known as ancylostomiasis, can still be found in individual regions of our country. The stimulants of this disease are Ancylostoma roundworms, which penetrate into the intestinal tract and lodge themselves in the duodenum, causing gastric and intestinal disorders and anemia. The principal measures for combating this disease involve a timely treatment of

patients and the prevention of soil contamination with sewage. Formerly, this disease was frequently observed in mines, but the introduction of underground sanitation and the active detection and treatment of patients made it possible to sanitize mines in Kazakhstan and Kirgizia, where ancylostomiasis was widespread. Foci of this disease, however, are still remaining in Georgia, mainly on tea plantations. Undoubtedly, these few remaining foci will be liquidated by introducing more intensive measures of sanitary soil preservation and a systematic treatment of patients.

Foci of urban leishmaniasis will also soon be liquidated in our country. This disease occurs in two forms: cutaneous leishmaniasis, which is expressed in the form of ulcerous skin injuries, and visceral leishmaniasis, during which the spleen becomes enlarged and a state of exhaustion sets in. Both forms are transmitted through mosquito bites, whereby only man is the source of infection with cutaneous leishmaniasis, while visceral leishmaniasis is also transmitted by dogs. At present, leishmaniasis foci can be found in a number of towns of Central Asia and the Caucasus. The destruction of mosquitos in these towns and in their suburbs is not a difficult problem, in view of the availability of such effective preparations as DDT, and this will result in the liquidation of leishmaniasis. Measures aimed at the destruction of mosquitos must be supplemented by the treatment of patients, the destruction of wandering dogs and the treatment of more valuable animals.

#### Combating Diseases Transmitted by Animals

The preventive measures against plague, which are being carried out in our country, may be cited as an example of the way in which a system of measures aimed at the prevention and liquidation of human zoonotic diseases should be set up, i.e. diseases which are transmitted to man by animals. As was already stated above, natural plague foci still exist at the present time; so far, the problem of the complete liquidation of these foci cannot yet be considered. At the same time, plague, as an epidemic human disease, has been practically liquidated in our country as a result of a system of prophylactic measures which have been put into effect.

A similar task, as was stated above, has been undertaken in connection with the struggle against tularemia. In regard to a number of other infections, such as brucellosis, rabies, tick-borne encephalitis, a local helminthic disease known as trichinosis, and certain other diseases, the immediate problem which must be considered is to achieve a sharp reduction in their morbidity rate, followed by the adoption of measures which will result in a complete liquidation of these diseases. At present, none of these infections occurs on a large scale: only a few score or hundreds of cases of such diseases are recorded in our country.

Brucellosis is a severe chronic disease, which starts with a fever and is then followed by an affection of internal organs and joints. Brucellosis is transmitted to man by sheep and goats, and less frequently by cows. Infection occurs during the care of sick animals (professional brucellosis of personnel engaged in animal husbandry work), and is also transmitted by milk and dairy products and especially frequently by "brynza" (sheep's milk cheese), as in the case of food brucellosis.

Brucellosis was apparently a disease known already in ancient times, but became the object of a detailed study only at the end of the 19th century. In our country, a systematic study of brucellosis was initiated in the 1930's, whereby this disease was found to be widespread and occurring in most regions of the country where animal husbandry was practiced. During World War II, as a result of the transfer of cattle to eastern regions, and then following its return to western regions, a further spread of brucellosis took place. It is not surprising, therefore, that the number of new human brucellosis cases has noticeably increased during the past 10 years.

Until recently, the principal measures for combating brucellosis included a veterinary supervision of livestock and the liquidation of infection foci (detection and isolation of sick animals). However, these veterinary measures had to be supplemented by specific measures for protecting humans from this disease.

It was necessary to find new means for preventing the development of brucellosis among humans, which would allow first of all the prevention of the professional type of this disease, which amounted to about 50% of all brucellosis cases.

Such means included live brucellosis vaccine, which started to be used on a wide scale since 1952. During a period of 4 years, this vaccine was inoculated to about 2 million people, mainly persons engaged in the care of livestock and in the processing of animal husbandry products (shepherds, milk maids, workers in slaughter houses, etc.). As a result of this measure, the brucellosis morbidity rate was reduced over 2 times during the following years, whereby this drop was more significant in regions with the highest ratio of professional brucellosis cases. Thus, for example, in the Kirgiz SSR, where this disease is predominantly of a professional nature, the number of brucellosis patients was reduced 6 times during a period of 4 years. At present, the number of professional brucellosis cases does not exceed 20% of all brucellosis cases.

The next step now is to prevent the transmission of brucellosis by milk, "brynza", and other dairy products. The principal measures in this respect include an accurate recording of the farms in which brucellosis cases have been taking place, and a general pasteurization of milk in all dairy farms. To control the manner in which these prophylactic measures are being carried out is not an easy thing, particularly in connection with people utilizing livestock for

individual purposes. For this reason, it appears advisable to conduct, within the next few years, an extensive caccination of the population against brucellosis in those localities where this infection is widespread among animals. This task is considerably simplified at the present time in view of the fact that a brucellosis vaccine has been developed, which does not have to be administered by subcutaneous injection, but can be applied on the skin. By using this vaccine, it will be possible to vaccinate large groups of the population in a short period of time.

The vaccination of livestock in localities with a high incidence rate of brucellosis has also been initiated on a rather wide scale. This measure will also contribute to a reduction, and finally to a liquidation, of brucellosis in livestock. Thus, it already appears to be possible to achieve a complete liquidation of brucellosis in our country.

Great efforts are required in solving the problem concerning the liquidation of human rabies. It is known that the principal carriers of this infection are members of the canine species, such as wolves, jackals, foxes, dogs, and in the Extreme North, also polar foxes. For this reason, a complete liquidation of rabies in these animals, widely disseminated over the huge territory of our country, is still impossible at the present time.

However, it is entirely possible to prevent cases of human rabies; this task is simplified by the fact that the main sources of human infections are not wild animals, but dogs (in 80-90% of the cases). For this reason, 9/10 of the struggle against rabies involves methods for combating rabies in dogs. In recent years, the Ministry of Public Health of the USSR, in collaboration with other interested departments and organizations, has expanded the combined system of measures aimed at combating rabies. Municipal economy organs and the veterinary service, under a constant control of public health organs, have adopted measures calling for an improved maintenance of dogs by their owners and for the destruction of homeless wandering dogs; dogs are being vaccinated against rabies, and control is maintained over the strictly required administration of Pasteur inoculations to all people bitten by dogs.

These measures have already given definite results: in 1954, the rabies morbidity rate dropped by 26%, in 1955 - by 50%, in 1956 - by 58%, as compared to 1951. If these measures are intensified, an even sharper reduction in the morbidity rate of human rabies may be achieved within the next few years, including even the practical liquidation of this disease.

The fulfillment of this task is simplified by the fact that rabies does not occur over the entire territory of our country, but only in certain localities (Donbas, Northern Caucasus, Tashkent Oblast').

Serious efforts will be required to prevent the occurrence of human tick-borne encephalitis cases. Natural foci, where this type



of infection is possible, cover enormous areas of the wooded zone of the country, extending from the shores of the Pacific Ocean to the Baltic Sea, and the task involving a complete liquidation of these infection foci cannot be considered at the present time. However, not all of these wooded areas are affected by tick-borne encephalitis. At present, more or less limited regions have been identified and studied to a more or less considerable extent, in which this infection represents a serious threat (primarily for prospecting and survey teams, logging personnel, etc). In addition, peculiar foci of infection have been discovered, in which this disease is transmitted to humans by secondary sources of infection, namely cattle, and most frequently through milk.

The destruction of ticks and the vaccination of the population are the principal measures used in combating tick-borne encephalitis. Experiments performed in Kemerovo Oblast' and in other places have shown that foci of tick-borne encephalitis in the vicinity of populated centers can be sanitized within a short period of time by using DDT preparations in wooded areas, and by protecting people working constantly in woods with preventive inoculations.

In regions affected by encephalitis, it is advisable to organize permanent sections for combating encephalitis in sanitary stations, provided with temporary (seasonal) epidemic teams equipped with the necessary means for combating this disease. No doubt, as a result of an improved work organization, it will be possible to reduce the morbidity rate of tick-borne encephalitis within the next few years, and later to reduce this morbidity to a minimum.

#### The Struggle Against Intestinal Infections Must be Intensified

The growing material well-being of our people and the tremendous volume of housing and public construction work create favorable conditions for the further onslaught against the most widely occurring intestinal infections, such as dysentery, epidemic hepatitis and helminthic diseases.

The above statement applies primarily to the case of dysentery. As a result of a more detailed study of the various forms of dysentery and the development of new treatment methods during the past 10 years, it became possible to consider the use of new and more effective methods for combating this infection. Formerly, efforts were directed mainly at the hospitalization of patients and the prophylactic vaccination of the population. These measures undoubtedly exerted a positive effect, although they proved to be definitely insufficient. The hopes placed upon a vaccination of the population as a prophylactic measure also were not fulfilled, since antidysenteric vaccines were found to be insufficiently effective.

At present, it was found that it is indispensable, first, to apply prophylactic measures in case of all acute intestinal diseases,

without considering the prevention of dysentery as a separate problem, in view of the fact that the majority of acute intestinal diseases are of an infectious (frequently, but not always, a dysenteric) character, and because the prophylactic measures used for this entire group of infections are absolutely identical (the conduct of personal and public hygiene measures). Second, factors determining whether a patient should be hospitalized or not have been revised, and the period of hospitalization has been reduced, in order that a greater number of patients in the most contagious period can be isolated from the localities where they represent the greatest threat of contagion to their environment. Third, in view of the prolonged course of the infection, the compulsory treatment of all acute intestinal patients in hospitals and at home has been introduced, followed by a period of observations in dispensaries and, if necessary, by a period of treatment against a possible recurrence of the disease. Compulsory methods of treatment have been adopted, which provide a combined therapeutic treatment based primarily on the use of antibiotics. Fourth, the volume of sanitary measures (including the struggle against flies, which are transmitters of dysentery) and of sanitary educational work has been substantially increased.

A network of consulting offices specializing in intestinal infections has been organized in polyclinics and epidemiological stations, which are entrusted with the control of all prophylactic measures being carried out; a cost-free supply of drugs and medicines to patients has been introduced, the production of antibiotics has been increased, and their distribution is being controlled etc.

The implementation of all these measures for combating dysentery has undoubtedly yielded good results: the morbidity rate of dysentery and other acute intestinal diseases has been dropping steadily during the past 5 years.

At present, a further and sharp reduction of the morbidity rate of dysentery and all other acute intestinal infections is a completely realistic problem.

In regard to epidemic hepatitis, the situation is considerably more complicated: so far, medical science has been unable to provide practicing medical personnel with any means for the specific prevention of this disease. Thus, the struggle against epidemic hepatitis must be based on a combination of measures aimed at the sanitary improvement of populated points, improvement of the quality of water supply, higher level of sanitary conditions in industry and public facilities, with operational anti-epidemic work.

At this point, we believe that it is proper to say a few words about the struggle against helminthic diseases. A systematic struggle against these diseases was started already in the 1940's, when annual examinations of several million people were conducted and their mass treatment was initiated (expulsion of helminths from the intestinal tract). Thus, in 1950, 12.9 million people were examined and 6.5



million people were treated, while in 1955, 33.9 million people were examined and 15 million people were treated. As a result, a very noticeable reduction in the number of people affected by helminths was achieved. Thus, for example, the ascariasis rate was reduced by over 30% during the past 6 years. The most effective work aimed at sanitizing the population from Ascaris worms is being performed in the Azerbaydzhan and Latvian SSR's, where the rate of this helminthic disease among the population was reduced 2 times during the past years.

At present, all the necessary conditions are present for further reducing the helminthic disease rate of the population: the necessary drugs are supplied in more than sufficient amounts by the medical industry, these drugs are issued to the population free of cost, and a sufficiently large number of helminthologists have been trained, which are entrusted with this work.

#### Child Infections Deserve Particular Attention

Measures for preventing the occurrence of child infections deserve special attention. Out of the total number of infectious diseases, excluding influenza and anginas, child infections, such as measles, whooping cough and scarlet fever, at present amount to approximately 2/3 of all cases. For this reason, particular attention should be given to the struggle against these diseases (Note: The progress achieved and the tasks to be solved in connection with the struggle against diphtheria have already been described above).

In the struggle against whooping cough, sufficiently effective means are already available at the present time to scientific and practicing personnel: the danger of severe complications of this disease has been reduced as a result of the use of antibiotics. The use of a vaccine against whooping cough has opened up the possibility of an active prevention of such child diseases. A problem of immediate interest at the present time is the setting up of an early diagnosis of this disease (which so far is not being done in frequent cases), and the effective treatment of patients, including hospitalization if necessary. It is also necessary to expand the volume of large-scale inoculations against whooping cough. These measures should contribute to a sharp decrease in the morbidity rate of whooping cough. It can be hoped that this rate will be reduced 2.5-3 times during a period of 5-6 years.

Until effective vaccines for the prevention of measles and scarlet fever become available, we do not have a sufficient basis for raising the problem of achieving a significant reduction in the morbidity rate of these infections. However, all the necessary conditions for an effective treatment of these diseases are available, and consequently, for preventing scarlet fever complications and child mortality due to measles.

A lot of changes may take place in the struggle against these two child infections if means for the prevention of these diseases will be found. In particular, this applies to measles: Soviet scientists are working persistently on the search for an antimeasles vaccine, and there are reasons to believe that this problem will be solved within the next few years.

### Prevention of Air-Drop Infections

Among air-drop infections, influenza, acute catarrhs of the respiratory tract and anginas exhibit the highest morbidity rate; these diseases, as a result of their large-scale occurrence, not only affect the health of people, but also result in considerable economic losses, since they yield the highest loss in working days.

Work on problems concerned with specific prophylactic measures and the treatment of influenza was conducted on a sufficiently intensive scale during the past 5 years. As a result of this work, Soviet scientists have suggested the use of two preparations, namely a live influenza vaccine and an anti-influenza serum. These preparations were subjected to extensive clinical and epidemiological tests, which have demonstrated that they are sufficiently effective. No doubt, they must be further improved; however, already at the present time, the extensive use of the vaccine will make it possible to protect considerable groups of the population during epidemic influenza outbreaks, while the use of the serum will relieve the severe course of the disease and will prevent the occurrence of dangerous complications.

A great deal can also be accomplished in preventing the occurrence of anginas, as a result of a timely treatment of patients, further sanitation of working conditions in industrial enterprises, and also by introducing sanitizing measures in child establishments. At present, antibiotics are widely used in the treatment of anginas, and their use makes it possible to prevent the development of such complications as heart and vascular injuries.

At the same time, the problem concerned with the prevention of influenza and anginas still awaits the scientific solution of a large number of unclarified problems.

### The Efforts of Scientists Should be Concentrated on the Solution of the Most Important Problems

The progress achieved by the Soviet public health system in the prevention and liquidation of infectious diseases are related to a great extent to the achievements of medical science. Soviet scientists have greatly contributed to the development of this science.

Soviet scientists have developed and introduced into practice various vaccines and sera active against numerous infectious diseases,

such as plague, brucellosis, tularemia, influenza, tick-borne encephalitis, etc. Our country has developed and improved numerous medicinal preparations, suggested abroad, and this work also required a large amount of important scientific research.

In the same way, our country has developed for the first time a large number of new antibiotics and chemotherapeutic preparations, insecticides and disinfection equipment, which are now available as powerful weapons in practical anti-epidemic work.

However, it would be a great simplification to reduce scientific achievements to the finding of a given vaccine or medicinal agent. A rational system of combating any type of infectious disease represents the conclusion of extensive combined work carried out by scientists and practicing personnel. We can cite as an example such an infection as malaria, which has been known for several scores of years to be transmitted through mosquito bites. In order to set up an effective system for combating malaria, the above knowledge proved to be insufficient. It was necessary to study in detail the biological characteristics and the behavior of mosquitos in various regions of the country, their wintering conditions, the sites where mosquitos hatched their eggs, the conditions under which infection occurs, and the fate of infected mosquitos. Every new agent or method used in combating mosquitos were subjected to a careful practical testing and check, and the effectiveness of these methods and agents was estimated. All this required extensive and laborious research, although this work actually represented only a small part of the entire combination of prophylactic measures in the struggle against malaria.

Many diseases, against which a struggle is now being successfully waged, were discovered only during the years of Soviet rule. One of such diseases, for example, is tick-borne encephalitis. Considerable efforts were required in order to find the virus which causes this disease, in order to study in detail the symptoms of the disease, clarify the problem of which animals are the virus hosts under natural conditions, which ticks are transmitters of the virus, and under what conditions does human infection occur. Only on the basis of these and many other data were reliable means for the destruction of ticks discovered, as well as an effective vaccine, capable of preventing this human disease.

Considerable and difficult problems are confronting medical science during the coming years, as a result of the extensive program for combating infectious diseases. A large amount of work must be done on the improvement of methods and means used in combating these diseases. This also applies to those diseases which are in the process of being successfully liquidated: scientists must stubbornly find ways of accelerating the rate of complete liquidation of a disease. But this applies to an even larger extent to those diseases which are still widespread, and against which a struggle is still carried out in an insufficiently effective manner.

Such diseases include primarily large-scale diseases like influenza and angina, and also diseases which are considerably widespread, such as acute intestinal diseases, measles, whooping cough, scarlet fever and epidemic hepatitis.

Our scientist owe a lot to the Soviet public health system, and to the Soviet people. Within the next few years, efforts should be concentrated at finding new effective means against the most widespread infectious diseases.

### The Struggle Against Infections Must Receive the Support of the Entire Soviet Nation

From the very first years of its existence, the Soviet public health system was an all-national system, not only because its task involved the protection of the health of the entire nation, but also because the efforts of the government and of medical workers were always supported by the creative initiative and resourcefulness of the population.

During the difficult early years of Soviet rule, when, as a result of the civil war, economic collapse and later poor harvests, epidemics of exanthematous fever and recurrent typhus broke out in the country, the great founder of our state, V. I. Lenin, called upon the entire Party and the whole nation to wage a struggle against these epidemics. The fact that the epidemics were liquidated within the shortest possible time was due to a considerable extent to the active participation in this struggle of wide groups of the population, to the constant efforts of industrial working commissions to achieve cleanliness, and to the work done by sanitary 5-men teams in the army, rural activists, and the sanitary personnel of housing administrations.

The resourcefulness displayed by the population also was of great help to the public health system during the years of the first Five-Year Plans. During World War II, sanitary teams were in operation, as well as sanitary representatives in enterprises and housing administrations. Red Cross organizations made a substantial contribution to the work done by public health organs and establishments in a wide variety of activities, starting with assistance to wounded soldiers in rear-area hospitals, and ending with sanitary commissions in industrial enterprises and housing administrations, which waged an active struggle for cleanliness.

Now, at the time of an extensive building of Communism, the public spirit and independent activity displayed by the population in the public health field play an even more important role. A new popular campaign aimed at achieving sanitary culture and improving medical service is in progress in many rayons and oblast's.

In Stalinsk Oblast', a popular campaign for the introduction of sanitary culture is being waged under the direction of the oblast' trade union council together with local medical personnel, and a

"2-month health drive" has been organized. Workers, employees, students, retired people (pension-holders), housewives, and engineering and technical personnel are actively participating in this drive. An enormous amount of work has been performed during this 2-month period. Thus, for example, the personnel of the mine construction combine "Artemshakhtostroy", together with the sanitary "aktiv", took an active part in setting up 47 sport and children's playgrounds; with the aid of the public, 21 saturator units for boiling water were installed; 17 new medical centers, as well as 9 laundries and 50 shower baths, were equipped on building sites, and a total of 27,000 trees, as well as large numbers of shrubs and flower beds were planted on these sites.

Rural workers are also working hard at raising the level of sanitary culture. S. M. Slavinskaya, a doctor at the Yur'yevsk rural district hospital (Ivanovskiy Rayon, Kirgiz SSR), reports that when she started to work in this rayon in 1945, helminthic diseases were widespread among the population; persistent sanitary educational work among the population of the rayon and the active participation of kolkhoz workers in a drive to raise the level of sanitary culture yielded definite results. A water supply line was built at the kolkhoz, a rational system for the removal and decontamination of garbage and sewage was organized, and a new hospital was built through the efforts of kolkhoz workers. All these measures resulted in the decontamination (sanitation) of a severe focus of helminthic diseases.

It is possible to cite a large number of such examples. These are not isolated cases, but rather typical manifestations of the initiative and individual activity displayed by the population in the struggle aimed at making working and living conditions more healthful, in the struggle for a sanitary culture.

However, there still remains much to be done in this respect. The large number of sanitary defects in our cities and villages is not only the result of poor work done by public health organs, but also is due to a lack of interest on the part of the population in problems concerned with sanitary culture, and to the indifference and lack of concern on the part of economic and industrial organizations.

Public food facilities are widely developed in our country. A large number of comfortable dining rooms, cafes, restaurants and snack bars have been built in recent years. The extensive introduction of the self-service method makes it possible for workers to enjoy a rapid and low-cost meal. Unfortunately, a large number of dining rooms can still be found, in which visitors are unable to wash their hands, and where they frequently lose their appetite in view of the sloppy and dirty way in which food is processed and cooked.

In many cities, it is possible to find modest, but well-equipped hotels, tourist homes, markets, which are kept in a clean

and neat condition; however, a visit to the rest rooms available in these facilities is enough to spoil your disposition for a long time. It is hardly necessary to mention that such "unfortunate trifles" are not only a source of inconvenience, but also act as centers of dissemination of intestinal and helminthic diseases. The whole population must be made aware that such a situation is intolerable, and it is precisely public opinion that must help public health workers to overcome the indifference manifested by certain uncultured economic workers towards such poor hygienic conditions.

During the summer, large numbers of flies appear in cities and villages. It is generally known that flies multiply in those places where dirt is found, where putrefied garbage is present, where rest rooms are poorly kept; and of course, no means, even such effective ones as DDT, will be able to effect the destruction of flies, if billions and billions of flies will multiply daily in putrefied garbage and manure. Under modern conditions, a correct disposal and decontamination of putrefied garbage is not a difficult matter. In order to achieve this purpose, it is only necessary to be concerned with elementary cleanliness and to express a disgust for dirt.

An enormous volume of housing construction is being performed in our country. Millions of people are being housed, or will be housed, in comfortable apartments in new housing units. It is pleasant to live in such apartments, it is nice to visit friends, but not all citizens, after moving into a nice apartment, are keeping it clean and neat. It happens quite often that, in recently built houses, trash is found lying on the stairs, rubbish and dirty windows are observed in apartments, and if one visits the backyard, one sees heaps of trash and dirt piled on the ground. Is it really necessary to point out that the struggle for sanitary culture involves first of all the achievement of clean and sanitary conditions in daily living standards?

In this important matter, schools and pre-school children's establishments should play a great role. Sanitary culture habits must be imbedded and raised in very early childhood, in nurseries and kindergartens, and in junior school grades. An honorable role, and at the same time a great responsibility, in this matter, belongs to pedagogs and school instructors.

Examples were given above, showing how the independent activity displayed by the population leads to a sharp improvement in working conditions at industrial enterprises, and thereby transforms labor into a factor of improved human health. In this connection, it is important to note that frequently this is not a matter of adopting extensive measures, requiring considerable capital investments, but rather it is a question of eliminating small disturbing factors, which produces a good sanitizing effect: well-furnished public and living quarters, continuous ventilation, shower rooms kept in good order, properly equipped rooms for female hygiene, clean windows in



workshops, regular conduct of industrial calisthenics, - all these factors not only make work more pleasant, but also prevent the development of a wide variety of diseases. Of course, the observation of all these "trifles" is the honorable duty of sanitary physicians, but is it really necessary to point out that the efforts of sanitary personnel will be reinforced 10-fold if they are assisted in this matter by every worker, every employee, every engineer and technician!

Sanitary education represents a powerful means for raising the sanitary cultural level of the population. Hundreds of sanitary training establishments have been organized in our country. Many thousands of medical workers are taking part in this work. A bright and original poster, an interestingly written brochure, an interesting lecture or radio program, an instructive and captivating film, schools giving public or correspondence courses to mothers, sanitary courses for workers of industrial and food enterprises, - such are the various forms of sanitary education available in our country.

Obviously, medical personnel is called upon to play an important role in this matter; however, other workers on the cultural front, and primarily pedagogs, must also take an active part in this program. A great role must also be played by public organizations, such as trade unions, Red Cross and Red Crescent societies, the Society for the Dissemination of Political and Scientific Knowledge, workers' and kolkhoz workers' clubs, and libraries. Actually, is there such an organization which has no interest in these problems?

We only wish to express the hope that the various forms of sanitary education will become more and more varied, interesting and original each day, and that each citizen of our country will possess a total amount of knowledge and customs indispensable for the preservation and strengthening of health, for attaining a long life span free of disease.

\* \* \*

The decree entitled "Concerning Measures for the Further Improvement of Medical Service and Health Preservation of the Population of the USSR" constitutes a new and clear demonstration of the concern expressed by the Communist Party and the Soviet government for the welfare of our population. This decree notes the great achievements made by the Soviet public health system, which are the result of the great advantages exhibited by our socialist system. The steady growth of the material and cultural standards of living of our people, the creation of an extensive network of medical establishments, the fact that the entire population is provided with a cost-free and high-quality medical assistance, and the development of the medical industry, - all these factors have contributed to a considerable strengthening of the health of our country's population. The overall mortality rate in the USSR has been reduced more than 4

times, while the child mortality rate has dropped almost 7 times. At present, the Soviet Union has the lowest total mortality rate of the population in the world.

At present, the average life span of Soviet people amounts to 68 years; in comparison to the pre-revolutionary level, this represents an increase of over 2 times.

The struggle against infectious diseases, the liquidation of the most dangerous diseases and the reduction in the propagation rate of most infections have already had a tremendous effect on the health standards of the population. A further extensive onslaught on infections, conducted under conditions marked by a new and tremendous growth of the national economy and supported by the Communist Party and the Soviet government, will undoubtedly make it possible to achieve further great progress and will contribute to the strengthening of the health and to an increase in the life expectancy of our people.

#### Appendix

##### A. List of Sanitary Training Films on Problems Concerned With the Struggle Against Infectious Diseases, (Produced Upon Request of the Ministry of Public Health of the USSR)

###### 1957 Films

Is Water at Fault? (Dysentery and Typhus), Part I.  
This is Our Own Fault (Struggle Against Helminths), Part I.  
A Case From Practicing Experience (Trachoma), Part I.

###### 1958 Films

I Could Not Say It (Tuberculosis and Its Prevention), 2 Parts.  
Lost Weeks (Angina), Part I.  
Botkin's Disease, Part I.  
This is Very Serious (Influenza), 2 Parts.

###### 1959 Films

Dangerous Carelessness (Struggle Against Rabies), 2 Parts.  
There Is a Concealed Danger Here (Tick-Borne Encephalitis), 2 Parts.

##### B. List of Brochures in the "Biology and Medicine" Series, Published in 1959.

1. Yu. I. Milenushkin . Nikolay Fedorovich Gamaleya.
2. V. I. Razumov. Contemporary Status of the Theory Concerning the Stage Development of Plants.



3. M. S. Marshak. Nutrition and Health.
4. R. Ye. Kavetskiy, K. P. Balitskiy and N. M. Turkevich. On the Nature of Malignant Tumors.
5. A. S. Gasanov. Vitamins and Health.
6. G. K. Khrushchov. On the Protective Properties of the Organism.
7. I. Ye. Glushchenko. At the Congress of Geneticists in Canada.
8. V. P. Demikhov. Transplantation of Organs: Is It Possible?
9. A. N. Studitskiy. The Restorative Forces of the Organism.
10. A. L. Shvarts. N. G. Chernyshevskiy and Russian Natural Science.
11. M. F. Vedenov. Ernst Hekkel - A Fighter for Darwinism.
12. F. N. Pravdin. C. Darwin and his Theory of the Evolution of Species.
13. I. K. Yanushevskiy. Alcohol is a Poison.
14. P. A. Petrishcheva. How Wild Animal Diseases Become Human Diseases.
15. V. S. Asatiani. Biological Catalysts.
16. P. A. Genkel' and S. V. Kushnirenko. Cold Resistance of Cultured Plants and Methods for Increasing It.
17. G. N. Kassil', Ye. M. Boyeva, A. M. Veyn. Treatment by Means of Needle Punctures.
18. B. A. Rubin. Physiology of Plants and Aid to Agriculture.
19. V. S. Farfel'. Physiology of Rest.
20. P. V. Vasil'yev, B. V. Kozlovskiy. Forest Resources of the USSR and Their Industrial Utilization in the 7-Year Plan.
21. Z. V. Yermol'yeva, N. M. Furer. Antibiotics and their Application.
22. L. K. Shaposhnikov. Let us Preserve Natural Resources.
23. N. I. Nuzhdin. Lamarck, Darwin and Modern Biology.
24. A. C. Romanov. The XVII Olympic Games of 1960.

C. Notice: Dear Comrades and Readers Subscribing to the Brochures and Lectures Published by the "Znaniye" Publishing House!

During 1960, the "Znaniye" Publishing House will issue, on a subscription basis, a total of 12 series, including 324 brochures-lectures. In order to satisfy readers' requests, the publishing house is starting the issue of two new series, namely a pedagogical series and a series entitled "Small Library for Rural Instructors".

The brochures-lectures are intended for the needs of instructors, propagandizers, agitators and specialists working in various branches of the national economy, and also for persons engaged in self-education.

The main purpose of these brochures-lectures is to propagandize the internal and foreign policies pursued by the Communist Party and the Soviet government; to help the Party in mobilizing the masses for successfully carrying out the historical decisions reached by the XXI Congress of the CPSU and at the Plenums of the CC CPSU; to familiarize the readers with the latest achievements in various branches of science and technology; and to describe the most important events in international life.

The purpose of the 8th series "Biology and Medicine" is to show the increasing role played by biological sciences in solving the most important national-economic problems during the period of extensive building of a Communist society. In 1960, brochures published in this series will reflect the progress made in biochemistry, biophysics, microbiology, genetics, physiology and in other branches of biology, which constitute a theoretical basis of agriculture and medicine. The brochures will also illustrate the development of Michurin's theory and will present a critique of idealistic tendencies in modern biology.

Brochures concerned with medical problems will describe the progress made by the Soviet public health system and its future growth potentials, outlined in the decree issued by the Central Committee of the CPSU and the Council of Ministers of the USSR, entitled "Concerning Measures for the Further Improvement of the Medical Service and for the Preservation of the Health of the Population of the USSR", as well as the most recent achievements of medical science and problems concerned with the utilization of new technical equipment in the medical field. Considerable attention is devoted in the brochures to the dissemination of hygienic knowledge, to problems concerning the struggle for a healthy life of Soviet people and the prolongation of their life span. A number of brochures will describe ways of preventing and treating individual most commonly found diseases.

In the series "Biology and Medicine", the following brochures lectures will be published in the near future:

A. D. Ado. Allergy.

N. A. Vinogradov. Health Protection (On the Achievements of the Soviet Public Health System and Its Future Tasks).

N. N. Zhukov-Verezhnikov, N. V. Lysogorov. Microbiology and Problems of Heredity.

M. G. Anan'yev. New Technology in Medicine.

I. Ye. El'piner. Ultrasonics in Biology.

D. Notice from the "Znaniye" Publishing House (on back cover)  
Comrades!

During 1960, the "Znaniye" Publishing House will publish the following 12 series of brochures-lectures (average size of brochures in all series - 2.5 quires).

Series	Number of brochures per year	Annual subscription rate	Cost per brochure
First series - Historical	36	21.60 rubles	60 kcp
Second " - Philosophical	36	21.60 "	60 "
Third " - Economic	36	21.60 "	60 "
Fourth " - Scientific-Technical	36	27.00 "	75 "
Fifth " - Agricultural	24	15.60 "	65 "
Sixth " - Problems of Literature & Art	24	15.60 "	65 "
Seventh " - International	24	14.40 "	60 "
Eighth " - Problems of Biology and Medicine	24	18.00 "	75 "
Ninth " - Problems of Physics and Chemistry	24	18.00 "	75 "
Tenth " - Youth	12	7.20 "	60 "
Eleventh " - Pedagogical	24	14.40 "	60 "
Twelfth " - "Small Library of the Rural Instructor"	24	15.60 "	65 "

Starting with 1960, each brochure will also include brief methodical data compiled for the assistance of instructors, as well as material helpful to people engaged in self-education, such as suggested literature lists, brief dictionaries and glossaries, figures and facts, etc.

Subscribe to the brochures-lectures published by the "Znaniye" Publishing House!

Requests for subscription may be addressed during any month of the year to city and rayon departments of "Soyuzpechat" (Central Administration for the Distribution of Printed Matter), to communications offices, sections and agencies (post offices), mailmen, and also to public subscription managers in factories, plants, sovkhozes, kolkhozes, government departments and educational establishments.

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